bones be next year? Not fossilized certainly. Fossil bones may be split by frost, but if the frost attacks them before they are fossilized, their chances of being preserved are small indeed!

Quaternary.—The remains of *Colymbus septentrionatis* Linn, have been discovered by E. T. Newton, in the Mundesley River bed, Norfolk, England.——The arguments respecting the Loess are still continued. Dr. A. Nehring, of Berlin, answers H. H. Howorth, in the February number of the *Geologicol Magazine*. He gives a list of the steppe animals found in the European Loess (Lagomys, Dipus, Spermophilus, Arctomys, Cricetus, Hystrix, Arvicola, Equus, Antilope), and asserts his belief that a considerable part of Germany or Central Europe once had a steppe fauna and flora. This fauna was interposed between the Arctic fauna of the glacial period, and the forest fauna of the Neolithic epoch. Postulating a fauna and flora like that of East Russia and West Siberia, Dr. Nehring maintains that the wind may have played an important part in the formation of the loess-like deposits of many places in Central Europe.——H. H. Howorth concludes his "Traces of a great Post-glacial flood" in the March number of the same magazine. The marine drift, in which littoral and deep-sea shells are often found confusedly heaped together, in some cases with little mixture of sand or shingle, and confined to small areas, unaccompanied by those sheets of silt which must have remained had subsidence been the cause of its formation, yields, in Mr. Howorth's belief, conclusive evidence of a great wave of waters, carrying the shells to varying heights and distances according to the conformation of the coast.

MINERALOGY.[1]

THE NOMENCLATURE OF METEORITES.—As a result of a careful study and classification of the 306 meteorites in the collection of the Museum of Natural History at Paris, Professors Daubrée and Meunier have introduced a large number of new names, which, however useful for classification, cannot be said to be a welcome addition to the already large nomenclature of lithology. The generic names, based on the amount of iron in the meteorites, appear to be well chosen, but the specific names are taken from the locality where the specimen chosen as a type happened to fall, and being without scientific import, will not receive general acceptance. By the valuable work of the authors, our knowledge of the origin and characters of meteorites has been greatly extended, but it can hardly be expected that lithologists will adopt all the names in the following classified list:

METEORITE.

I. HOLOSIDERITE.

Octibbehite, tazewellite, nelsonite, catarinite, braunite, caillite, schwetzite, jewellite, campbellite, burlingtonite, tuczonite, lenartite.

[1] Edited by Professor H. CARVILL LEWIS, Academy of Natural Sciences, Philadelphia, to whom communications, papers for review, etc., should be sent.

II. SYSSIDERITE.

Pallasite, atacamaite, brahinite, deesite, lodranite.

III. SPORASIDERITE.

1. *Polysiderite.*—Toulite, logronite.
2. *Oligosiderite.* — Aumalite, chantonnite, aiglite, montrejite, parnallite, luceite, canellite, mesminite, belajite, butsurite, manbhoomite, banjite, limerickite, menite, bustite, richmondite, tieschite, erxlebenite, quincite, stawropolite, tadjerite, rutlamite, renazzite.
3. *Cryptosiderite.*—Howardite, omansite, chladnite.

IV. ASIDERITE.

Igastite, rodite, eukrite, shalkite, chassignite, bokkevelite, orgueillite.

The classification adopted by Tschermak is much more simple, being as follows:

I. METEORIC STONES.

1. *Eukrite.*—Anorthite and augite, iron being rare.
2. Olivine, bronzite, enstatite; iron rarely seen.
3. *Chondrite.*—Olivine and bronzite with iron.

II. METEORIC IRON.

4. *Mesosiderite.*—Silicates and meteoric iron forming a granular mixture.
5. *Pallasite.*—Meteoric iron porphyritically enclosing crystals of silicates.
6. Meteoric iron.

GELATINOUS SILICA.—Dr. H. Leffmann has found that at the bottom of bottles containing certain siliceous geyser waters from the Yellowstone National park, there is deposited a quantity of gelatinous matter looking like the white of egg, which, on analysis, proved to be nearly pure silica. It was entirely structureless, and by heat dried to a white opaque mass. After having been inclosed for several weeks in a closed vessel with strong sulphuric acid, it shrank to about one-tenth its volume.

The water from the "Opal spring" is opalescent, appearing like what is produced by adding an alcoholic solution of rosin to a large volume of water. The opalescence remains for months, gelatinous silica not being deposited unless the water is evaporated.

ZEOLITES FROM FRITZ ISLAND.—B. Sadtler, Jr., has analyzed the chabazite, mesolite and apophyllite from Fritz island, near Reading, Pa. The analyses are published in the *American Chemical Journal*, and they agree closely with analyses of the same minerals from other localities.

NATIVE LEAD FROM IDAHO.—Professor W. P. Blake has found native lead and minium near Bellevue, Idaho, where they occur in galena. The native lead, a rare species, "is in small rounded masses or grains from an eighth to one-quarter of an inch in diameter, and sometimes in irregularly reniform bunches, weighing an ounce or more. The red oxide is in the form of coatings or crusts on the metal."—*Amer. Jour. Science.*

TOPAZ FROM MAINE.—Mr. G. F. Kunz has discovered topaz in fine and large crystals at Stoneham, Maine. Some of the large opaque masses were parts of crystals measuring a foot across. Of transparent crystals one of a bluish and greenish tint measured 2½ inches vertically and three inches across. A number of interesting minerals are associated with the topaz.

TURQUOISE FROM ARIZONA.—Professor W. P. Blake, in an interesting article in the *American Journal of Science* for March, describes some ancient mines of green turquoise in Cochise county, Arizona. The turquoise, which he has called "*chalchuite*," from the aboriginal name of the gem, is of a light apple-green color like that from New Mexico, and has a specific gravity of 2.7–2.8. It occurs in rock in seams and veinlets rarely more than an eighth or a quarter of an inch in thickness.

The locality is interesting from an archæological point of view. The mine had been worked probably by the Aztecs and Montezumas, and many ancient stone implements were found about the mine. Turquoise was in general use among the various tribes of Mexico, and was worked with considerable skill by ancient lapidaries.

Professor Blake thinks that turquoise should receive the mineralogical name of either "*callainite*," a modification of Pliny's name "callaina," or "*chalchuite*," derived from "chalchihuitl," a name probably older than Pliny's.

MOLYBDENITE IN HONG KONG.—F. Warrington Eastlake, in a communication to *Nature*, notes the occurrence of molybdenite or molybdenum glance (MoS_2) on the island of Hong Kong. Silver has been observed in small quantities, also galena, lead and iron pyrites.

The composition of the molybdenite is, sulphur 40 per cent, molybdenum 60 per cent, or one per cent less of sulphur than is given by Dana as the composition of American molybdenite.

WATER IN CHALCEDONY.—A geode of chalcedony recently received from Salto river Uruguay, contains an unusual amount of water, between two and three drams being observed. These geodes occur in a basaltic formation of amygdaloid and melaphyr.

SOME ENCLOSURES IN MUSCOVITE.—Professor Lewis, in a paper read before the Philadelphia Academy, on Dec. 26, 1882, discusses the enclosures of biotite and magnetite so frequent in the muscovite of Southern Pennsylvania and Northern Delaware. By dissecting a crystal of muscovite enclosing biotite into a consecutive series of cleavage laminæ, a vertical section of the crystal is obtained, which, as exhibited in an accompanying plate, shows that while the edges of both the outer and inner crystals remain parallel in successive plates, the substance of the black biotite is gradually eaten away, and is replaced by the encroaching musco-

vite as the summit of the biotite crystal is approached. The inner black crystal contains a small hole filled by white muscovite, and this hole enlarges with successive plates until finally the biotite has completely disappeared, as though eaten away by the muscovite.

The author confirms the observations of Reusch and Rose on the parallelism of the crystallographic planes of the micas, as proved by their "strike-figures." The biotite is often altered into an exfoliating *hydro-biotite*, just as muscovite changes into margarodite (*hydro-muscovite*).

The superficial markings of reticulated magnetite are also discussed, and shown to be always parallel in direction with the lines of the artificial "strike-figures." Their direction is, therefore, not due to any twinning crystallization of the dendrites themselves, but to the governing influence of the crystallographic lines of the muscovite.

DOPPLERITE.—W. Demel has analyzed a homogeneous specimen of dopplerite from Aussee, and after drying at 100°–120°, finds 56.42–56.51 per cent. of carbon, and 5.34–5.20 hydrogen, leading to the formula, $C_{12}H_{14}O_6$. The ash contained a large percentage of calcium, the greater parts of which had probably been combined with the organic matter. Experiments were made to show that dopplerite could combine with calcium, and the conclusion is reached that this mineral may be regarded as the calcium salt of one or several acids belonging to the humus group.

"MOTHER OF PETRE."—The very interesting discovery, announced a few years since, that saltpetre (nitre) is formed in nature by the action of a living ferment, just as alcohol is formed by the growth of the yeast fungus, introduces new conceptions of the origin of the nitrates, and shows that the process of nitrification, like that of acetification, is a true growth. As shown by F. H. Storer, in a recent number of *Science*, the practical application of this fact was made use of as long ago as 1686, when Sewall speaks of the necessity of getting "seed petre or mother of petre" to make a successful saltpetre bed. When these "saltpetre yards" were worked in Europe in order to obtain the nitrate for the manufacture of gunpowder, and it was desired to start a new yard, it was said to be necessary to insure success to bring some earth from an old yard and mix it with the new earth.

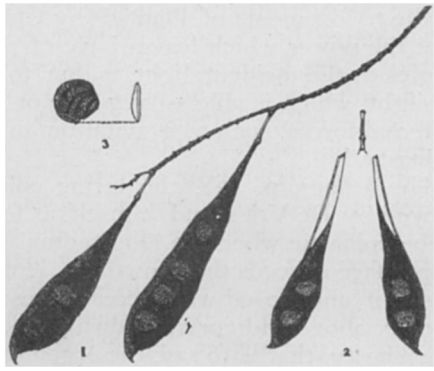
The organism which acts as the nitrifying ferment has been shown by Schlösing and Müntz to consist of very minute round or slightly elongated corpuscles, existing either singly or joined in couples; being of slow growth, and multiplying by budding. Dr. A. Springer, in the last number of the Proceedings of the Ohio Mechanics' Institute, describes some experiments of his own, in which the nitrates in an infusion of certain roots of plants were dissociated and nitric oxide evolved through the action of a fer-

ment composed of small cylindrical rods which moved rapidly across the field of the microscope with a wriggling motion, often bending themselves to form a circle. This may be the same as that mentioned by Bechamp under the name of *Microzyma cretæ*. In the same journal, Professor R. B. Warder gives a list of papers referring to the influence of bacteria upon the changes of nitrogenous compounds.

That the natural nitrates are the result of a fungoid growth is a fact interesting to mineralogists as well as to chemists, biologists and naturalists generally.

BOTANY.[1]

DISPERSION OF SEED BY WISTARIA.—In January of the present year I gathered a few pods of the Chinese Wistaria (*Wistaria consequana* Benth.), and placed them in a vase on the mantel shelf. A few evenings after, while sitting at a table in the center of the room, with my back towards the mantel, I was startled by a loud, snapping report, and the consciousness that something struck against the ceiling directly above my head, and then against a window shade at the extreme end of the room. I imagined that this circumstance was caused by the explosion of an unusually refractory piece of coal in the stove, which was burning at the chimney behind me, with the door wide open. But I soon discovered that the smallest of my Wistaria pods, Fig. 1, had ruptured, and that the flying missile was one of its enclosed beans, which I found on the floor a few feet from the window, where it had rebounded after striking the shade. Fig. 3 represents this bean with its spiral lines of dark shading, and also gives a transverse section. All the figures are drawn one-third of the natural size. The valves of the pod in question, as shown at Fig. 2, turned entirely inside out at their lower extremity, and separated from their pedicel, not at the well marked juncture, but at a little distance below it. The other pod of the same raceme was wrapped in paper and laid away. A few days after I happened to hear the noise occasioned by its rupture, and found it had separated from its pedicel in the same manner, that is, about half an inch below the joint. This



Wistaria Pods.

[1] Edited by PROF. C. E. BESSEY, Ames, Iowa.